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Establishing a NIH-funded Swine Resource and Research Center

Franziska Grieder, D.V.M., Ph.D.
National Center for Research resources, National Institutes of Health

Swine have become increasingly utilized as biomedical research models for human disease, partially replacing dogs and primates. As research swine populations have experienced significant increases during the past few years, investigators have requested more resources for improving husbandry and medical care of new swine strains created by genetic technologies. This happened with a major breakthrough in animal cloning by scientists collaborating at the University of Missouri and Immerge BioTherapeutics (Cambridge, Mass). These researchers produced genetically-engineered pigs in which the gene encoding alpha-1,3 galactosyltransferase was knocked-out (research funded in part by NCRR/NIH). This is significant because the presence of the sugar alpha-1,3 galactose on pig endothelial cells, but not on those of humans or other primates, presents a major obstacle in pig-to-human xenotransplantation, *i.e*., very rapid rejection of pig organs by humans. Alpha-1,3 galactosyltransferase knock-out pigs that do not produce the sugar could be a solution to this problem.

To promote research on pigs and facilitate the distribution and availability of critically needed swine models, NCRR has released a Request for Application (RFA) entitled National Swine Research and Resource Center (NSRRC). The goal of the NSRRC will be to ensure that biomedical investigators have access to swine models for studies involving human health and disease. This new swine resource would also provide the opportunity to develop further emerging research technologies such as cryopreservation, genotyping and phenotyping of pig models, infectious disease monitoring, production of new transgenic and knockout models, as well as investigations into specific biomedical research areas including cardiovascular and cerebrovascular diseases, diabetes mellitus, xenotransplantation, and neurodegenerative disorders, among others. The pig model presents a number of advantages over other animal models. These include the pig's size and physiological capacity, its availability in large numbers because of its large litter size and ease of breeding, and the advances made in genetic engineering.

Depending on the fiscal year 2003 appropriation, it is anticipated that one such swine resource center would be funded before September 2003 for $1 million direct cost. The meritorious and competitive center would serve as a resource for investigators in different research areas on a regional and national basis. The storage and distribution would include live animals, organs, reproductive and somatic cells.

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